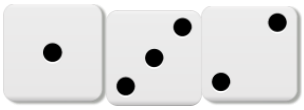
HANGAIA TE URUPOUNAMU MŌ TĀTOU

Taumata 1 (Tau 0)
Tau me te Taurangi

Teacher Booklet
ODD YEARS

Rapanga 1 (Whole Class Option)	Kei te hanga a Sam rāua ko Jade I ētahi mataono ki te tākaro te kēmu nakehi me ngā arapiki. Ānei te tauira o ngā tau e toru.  He aha ngā mea orite me ngā mea rerekē o ēnei tauira? He aha te tauira māmā ki te kite? Ka taea e koe te hanga tauira o ngā tau 4,5 me te 6?
Whakaaro Matua Pāngarau ***Big Ideas***	Quantity is an attribute of a set of objects and we use numbers (represented by words and symbols) to name specific quantities. A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.
Hononga Marautanga ***Curriculum Links***	**NA1-3:** Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Make and identify groupings for numbers from 0-10. • Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.
Reo Matatini Pāngarau ***Mathematical Language***	Number words (e.g., one, two, three…).
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students who have used different forms of structured grouping. Record their representations and the number symbol. Ask the students to practice copying the different groupings and record the matching number symbol. **Connect:** Can you create a dot pattern for 8? Highlight how 8 can be represented and counted as 4 twos or 2 fours. Represent this in a variety of ways and make connections between - materials → drawing → numbers → equations.

Kōrero Tautoko ***Teacher Notes***	• Provide students with counters or stickers and other materials but also ask them to draw to represent each pattern they have created. • Provide coloured markers for students to draw groupings. • Notice their representations. Consider, are their drawings structured so that the groups are clear and easy to see? Are they showing an understanding of groupings within their representations?
Ngohe whakaharatau ***Independent Tasks***	Mere and Ana are playing with acorns and using them to make dice patterns for the numbers 1 to 8. What are some of the patterns they make? Can you draw the pattern and write the numbers to match? Can you write a number sentence to represent it?
Ngā matapae ***Anticipations***	

Rapanga 2	I whakarite a Fau rāua ko Mepa i tētahi kēmu hou. E hiahia ana rāua kia hanga he mataono 7 -10. Ka taea e koutou te hangaia he tauira mataono 7,8,9,10? E hia ngā tauira rerekē ka taea te hanga?
Whakaaro Matua Pāngarau ***Big Ideas***	Quantity is an attribute of a set of objects and we use numbers (represented by words and symbols) to name specific quantities. A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.
Hononga Marautanga ***Curriculum Links***	**NA1-1:** Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. **NA1-3:** Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Make and identify groupings for numbers from 0-10. • Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.
Reo Matatini Pāngarau ***Mathematical Language***	Number words (e.g., one, two, three…)
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students who have used different forms of structured grouping. Record their representations and the number symbol. Ask the students to practice copying the different groupings and record the matching number symbol. **Connect:** Can you create a dot pattern for 12? Highlight how 12 can be represented and counted using groupings - six 2s, two 6s, three 4s, 10 and 2 etc. Represent this in a variety of ways and make connections between - materials → drawing → numbers → equation.

Kōrero Tautoko ***Teacher Notes***	● Provide students with counters or stickers and other materials but also ask them to draw to represent each pattern they have created. ● Provide coloured markers for students to draw groupings. ● Notice their representations. Consider, are their drawings structured so that the groups are clear and easy to see? Are they showing an understanding of groupings within their representations?
Ngohe whakaharatau ***Independent Tasks***	Mary and Sima are playing with pinecones and using them to make dice patterns for the numbers 4 to 12. What are some of the patterns they make? Can you draw the pattern and write the numbers to match? Can you write a number sentence to represent it?
Ngā matapae ***Anticipations***	

Rapanga 3	Kei a Hone ētahi māpere. E hiahia ana ia ki te tatau ngā māpere? Me awhi koe ki a ia. He aha te ara tere ki te tatau ngā mapere? Kei a Mikaera ētahi māpere. E hiahia ana ia ki te tatau ngā māpere? Me awhi koe ki a ia. He aha te ara tere ki te tatau ngā mapere?
Whakaaro Matua Pāngarau ***Big Ideas***	Objects in a set can be grouped and counted to get a final total. Quantity is an attribute of a set of objects and we use numbers (represented by words and symbols) to name specific quantities. A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.
Hononga Marautanga ***Curriculum Links***	**NA1-1**: Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. **NA1-3:** Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Count in groups. • Represent and explain reasoning using pictures, numbers, and words. • Compare two sets.
Reo Matatini Pāngarau ***Mathematical Language***	Number words (e.g., one, two, three…).
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	For first task with ten marbles, select any students who are counting in twos or using groups to share their reasoning. If all students are using one to one counting, then model counting in twos and record this on the board as two dots and write the number 2 underneath and then another two dots and the number 4. The focus is to move students beyond one to one counting. Repeat this for the second task with 14 marbles. **Connect:** Who has more marbles, John or Levi? Can you explain and prove your answer?

Kōrero Tautoko ***Teacher Notes***	• Have sets of marbles or change this to objects relevant to your students. For the first task, give the students a set of 10 marbles. For the second problem, give the students a set of 14 marbles. • While students are finding out how many marbles are in the set, note the students who count in twos or use groups. Highlight this reasoning during share back. • Students should represent how they counted by drawing and/or writing numbers. • The key focus is to move students beyond one-to-one counting. • For the independent task, use round counters to represent the stickers. Have bags of counters with between 12 – 20 counters for the students to choose.
Ngohe whakaharatau ***Independent Tasks***	Liana has some stickers. She wants to know how many stickers she has. Can you help her count the stickers? Can you arrange the stickers into an easy way to count them? Now make sure that you draw your pattern and write the numbers to match
Ngā matapae ***Anticipations***	

Rapanga 4	Kua kohi rau a Hera. E haihia ana ia ki te tatau ngā rau. Me awhi koe ki a ia. He aha te ara tere ki te tatau ngā rau? Ka taea e koe te whakarōpūhia ngā momo tataunga?
Whakaaro Matua Pāngarau ***Big Ideas***	Objects in a set can be grouped and counted to get a final total. Quantity is an attribute of a set of objects and we use numbers (represented by words and symbols) to name specific quantities. A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.
Hononga Marautanga ***Curriculum Links***	**NA1-1:** Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. **NA1-3**: Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Count by using groups. • Represent and explain reasoning using pictures, numbers, and words. • Justify that quantity does not change when the objects are regrouped.
Reo Matatini Pāngarau ***Mathematical Language***	Number words (e.g., one, two, three…).
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select any students who are counting in twos or using groups to share their reasoning. If all students are using one to one counting, then model counting in twos and record this on the board as two dots and write the number 2 underneath and then another two dots and the number 4. The focus is to move students beyond one to one counting. Select students who used different forms of structured grouping (4, 5, 10) to share their solution. Have children practice copying these different groupings and recording the number symbol alongside them. **Connect:** Either choose the set number/s which children did not use e.g., 2s, 4, 5, 10 and ask them to group the set into those numbers OR if all set numbers were shared back then give students 16 leaves and ask them to arrange into groups to count quickly.

	Show how this can be represented, and make connections between different forms of representation: materials → drawing → numbers → equation
Kōrero Tautoko ***Teacher Notes***	• Make links to yesterday's task as part of the launch. Remind children that they can count in different ways. • Have a set of 20 leaves or change this to an object relevant to your students. • Move beyond 1-1 counting and focus on counting in groups. • Notice students who use groups of 4, 5, or 10 and support them to write the numbers under the set. Select these students to share back. • Children represent how they counted by drawing or writing numbers or equations. • For the independent task, use round counters or pictures to represent the cicada shells. Have bags ready with between 12 – 20 counters for the students to choose.
Ngohe whakaharatau ***Independent Tasks***	Liana has been collecting cicada shells. She wants to know how many cicada shells she has. Can you help her count them? Can you arrange the cicada shells in different ways to find out how many of them she has? Make sure that you show the groups that you used and write the numbers to match them.
Ngā matapae ***Anticipations***	

Rapanga 5 (Whole Class Option)	10 ngā putiputi a Tupou, ā, e rua āna kete. He aha ngā momo rōpū ki ia kete? Ka taea te tā pikitia, te tuhi rerenga tau hoki?
Whakaaro Matua Pāngarau ***Big Ideas***	Quantity is an attribute of a set of objects and we use numbers (represented by words and symbols) to name specific quantities. A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole. Equations show relationships of equality between parts on either side of the equal sign. The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other.
Hononga Marautanga ***Curriculum Links***	**NA1-1:** Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. **NA1-3:** Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Group objects to 10 in different ways. • Use patterns and relationships to solve problems. • Represent and explain reasoning using pictures, numbers and words.
Reo Matatini Pāngarau ***Mathematical Language***	Number words (e.g., one, two, three…).
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students who have used patterns to find different possibilities to share their solution strategies. Record these using both pictorial representations (tens frames and equations). Connect: Select a student who has developed a systematic way to find all possibilities and ask other students to use that way to find all the possibilities for 14 pinecones. Otherwise use the following example… Tupou has worked out a way to find all the different combinations. She begins by putting 10 tipani in one basket and

	none in the other. (Record as ten counters and nothing and 10 + 0 = 10) Then she knows that the next one will be 9 tipani in one basket and one tipani in the other basket. (Record as 9 counters and 1 counter and 9 + 1 = 10) Can you use Tupou's idea to find all the different combinations? What patterns do you notice?
Kōrero Tautoko ***Teacher Notes***	• Have sets of tipani or materials to represent them or change this to an object/ context relevant to your students. • Notice students using patterns to find the different combinations and highlight this during sharing back. • Expect students to represent using counting and by writing numbers. Note those who used structured and clear representations. • Discuss and show with materials the commutative property (4 + 6 = 6 + 4)
Ngohe whakaharatau ***Independent Tasks***	Jenna has 12 grapes and two bowls. What are all the different ways that she could put the grapes into the bowls? Record your ideas using drawings and number sentences.
Ngā matapae ***Anticipations***	

Rapanga 6	I kohia e Seini i ētahi putiputi. I kohia e 3 ngā putiputi whero me 3 ngā putiputi kowhai. E hia te katoa o ngā putiputi? I kohia e Maria i ētahi putiputi. I kohia e 4 ngā putiputi whero me 3 ngā putiputi kowhai. E hia te katoa o ngā putiputi? I kohia e Kare i ētahi putiputi. I kohia e 4 ngā putiputi whero me 5 ngā putiputi kowhai. E hia te katoa o ngā putiputi?
Whakaaro Matua Pāngarau ***Big Ideas***	Objects in a set can be grouped and counted to get a final total. Number operations and strategies to solve number operations can be recorded using words, numbers, diagrams, and symbols.
Hononga Marautanga ***Curriculum Links***	**NA1-1:** Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. **NA1-3:** Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Solve one digit addition problems. • Explain how to use known facts to solve addition problems.
Reo Matatini Pāngarau ***Mathematical Language***	Add
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students who use their knowledge of doubles or counting on to share their reasoning. If all students count all, then model how you could use doubles or counting on. Connect: Ask students to work out 5 + 6 = using knowledge of doubles and/or counting.

Kōrero Tautoko ***Teacher Notes***	• Introduce each problem one at a time and given students an opportunity to solve it and share back before introducing the next problem. • Have concrete material available if needed for students to select (e.g., tens frames, counters). • Expect to students to draw/record their number sentences. Model this if needed. • Notice if students see patterns in each set of problems.
Ngohe whakaharatau ***Independent Tasks***	Seini was collecting some flowers. She picked 4 red flowers and 4 yellow flowers. How many flowers did she pick altogether? Sepi was collecting some flowers. She picked 5 orange flowers and 4 white flowers. How many flowers did she pick altogether? Tiana was collecting some flowers. She picked 5 blue flowers and 5 yellow flowers. How many flowers did she pick altogether? Lia was collecting some flowers. She picked 6 red flowers and 5 white flowers. How many flowers did she pick altogether? 4 + 3 = 3 + 4 = 7 + 6 = 6 + 7 =
Ngā matapae ***Anticipations***	

Rapanga 7	E 3 ngā pene ā Vimi, e 6 ngā pene ā Hori, e hia te katoa? E 7 ngā pene ā Vimi, e 4 ngā pene ā Hori, e hia te katoa? E 5 ngā pene ā Vimi, e 9 ngā pene ā Hori, e hia te katoa?
Whakaaro Matua Pāngarau ***Big Ideas***	Objects in a set can be grouped and counted to get a final total. Number operations and strategies to solve number operations can be recorded using words, numbers, diagrams and symbols. There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.
Hononga Marautanga ***Curriculum Links***	**NA1-1:** Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. **NA1-3:** Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Solve one digit addition problems. • Explain how to use known facts to solve addition problems. • Explain the commutative property of addition.
Reo Matatini Pāngarau ***Mathematical Language***	Add, commutative property.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students who are using counting on to solve the problem to share. Record this on board or if no students are using counting on, then model as another way the teacher has seen used before. If students are able to use counting on, then select students using a grouping solution to share or model this as an alternative solution strategy. If students use the commutative property (e.g., 3 + 6 = 6 + 3), highlight this and discuss with the other students. **Connect:** Ask students to describe how you would solve the following problem by counting on or using grouping: 6 + 8 =

Kōrero Tautoko ***Teacher Notes***	• Introduce each problem one at a time and given students an opportunity to solve it and share back before introducing the next problem. • Have concrete material available if needed for students to select (e.g., tens frames, counters). • Expect to students to draw/record their number sentences. Model this if needed. • Notice and highlight if students use the commutative property of addition.
Ngohe whakaharatau ***Independent Tasks***	Vimi's soccer team scored 6 goals in one game and 2 goals in another game. How many goals did her team score altogether? Nate's soccer team scored 8 goals in one game and 6 goals in another game. How many goals did his team score altogether? Leti's soccer team scored 9 goals in one game and 4 goals in another game. How many goals did her team score altogether? 7 + 5 = 6 + 8 = 5 + 9 =
Ngā matapae ***Anticipations***	

Rapanga 8	E 6 ngā māpere a Mere. I hoatu a Mere e 3 ki tana hoa. E hia ngā māpere a Mere inaianei? E 9 ngā māpere a Mere. I hoatu a Mere e 5 ki tana hoa. E hia ngā māpere a Mere inaianei? E 12 ngā māpere a Mere. I hoatu a Mere e 3 ki tana hoa. E hia ngā māpere a Mere inaianei?
Whakaaro Matua Pāngarau ***Big Ideas***	Objects in a set can be grouped and counted to get a final total. Number operations and strategies to solve number operations can be recorded using words, numbers, diagrams and symbols. There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.
Hononga Marautanga ***Curriculum Links***	**NA1-1:** Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. **NA1-3:** Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Solve subtraction problems by splitting a set into groups. • Solve subtraction problems by bridging decades. • Represent and explain reasoning using pictures, numbers, and words.
Reo Matatini Pāngarau ***Mathematical Language***	Subtract, inverse relationship, addition, subtraction.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select student solution strategies where they have used inverse relationships, grouping, and knowledge of sets (e.g., 3 + 3 = 6 so 6 – 3 = 3) or have subtracted in parts. If no students use grouping or subtraction in parts, then model this as a solution strategy that students have used in the past. Connect: Ask students to describe how you would solve the following problem using knowledge of sets or subtraction in parts: 14 – 5 =

Kōrero Tautoko ***Teacher Notes***	• Introduce each problem one at a time and given students an opportunity to solve it and share back before introducing the next problem. • Have concrete material available if needed for students to select (e.g., tens frames, counters). • Expect to students to draw/record their number sentences. Model this if needed. • Notice students who use grouping to help solve the problems or known facts that draw on the inverse relationship of addition and subtraction, e.g. 3 + 3 = 6 so 6 - 3 = 3
Ngohe whakaharatau ***Independent Tasks***	Sima caught 7 fish and gave his friend 4 fish. How many fish does Sima have left? Timo caught 9 fish and gave his friend 4 fish. How many fish does Timo have left? Max caught 11 fish and gave his friend 2 fish. How many fish does Max have left? 8 – 3 = 6 – 4= 5 – 3 = 4 – 4 =
Ngā matapae ***Anticipations***	

Rapanga 9 (Whole Class Option)	He mahi takirua. Wānangahia ēnei, whiriwhirihia ko ēhea ngā mea tika, ko ēhea ngā mea hē. 8=8 4+3=7+4 9=5+4 8+6=9+5 10-8=9-7 14-6=14-6 7=10 Whakamāramahia mai ou whakautu.
Whakaaro Matua Pāngarau ***Big Ideas***	Equations show relationships of equality between parts on either side of the equal sign. The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other
Hononga Marautanga ***Curriculum Links***	**NA1-1:** Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. **NA1-3:** Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Explain and justify relationships between numbers in an equation. • Write statements of equivalence in words and using notation. • Solve equivalence problems and explain and justify the solutions.
Reo Matatini Pāngarau ***Mathematical Language***	Equal sign, relationship, same, different.

Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Allow students to share misconceptions related to the equal sign to position them to engage in argumentation. Draw out discussion that the equal sign means the same on both sides but also that it shows a relationship. Select students to share who have used patterns and noticed relationships to recognise equivalence. Connect: Ask students to write their own true and false number sentences. Note students who use the equal sign flexibly.
Kōrero Tautoko ***Teacher Notes***	• Ensure that students understand what true and false means. Introduce notation of not equal (≠) for the number sentences that they think are false. • Focus on the equal sign as showing an equivalent relationship across both sides. • Students may begin by demonstrating misconceptions (4 + 3 = 7 + 4 is true because 4 + 3 = 7). This can be used to position students to agree/disagree. • Teacher to notice students who are able to accept the use of the equals sign to show equivalent relationships. • Use arrows and notation to show relationships on the equations to the students.
Ngohe whakaharatau ***Independent Tasks***	Solve these problems: 3 + 9 = 4 + 8 = 5 + 7 = 6 + 6 = 7 + 5 = 8 + 4 = 9 + 3 = What patterns do you notice in the equations? Could you write more equations that match the pattern?
Ngā matapae ***Anticipations***	

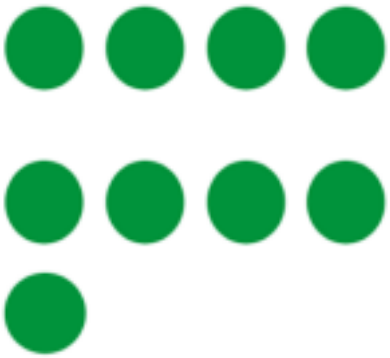
Rapanga 10	Ānei ētahi rerenga tau. He aha ngā whakautu? 5+3=8 3+5= 9+6=15 6+9= 13+7=20 7+13= He aha ngā tauira e puta mai ana? I kite koe i tētahi ara māmā ki te whakautu ēnei rerenga tau?
Whakaaro Matua Pāngarau ***Big Ideas***	There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.
Hononga Marautanga ***Curriculum Links***	**NA1-1:** Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. **NA1-3:** Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Explain and justify the commutative property of addition. • Represent and explain reasoning using pictures, numbers, and words.
Reo Matatini Pāngarau ***Mathematical Language***	Addition, commutative property.

Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students who use the commutative property rather than calculating. Highlight to the students that you do not need to calculate but can use the relationship to solve different equations. Ask students to consider whether this will always work and when it will not work. Model writing the number sentences for the children as 9 + 6 = 6 + 9. Connect: Use quasi-variables (large numbers) to press students to generalise. 89 + 63 = 152 63 + 89 = ? Can you write your own number sentences that use this pattern? Does this always work?
Kōrero Tautoko ***Teacher Notes***	• Students may compute each sum separately or draw on the commutative property of addition. • This task is about exploring the commutative property - the idea that you can add in any order and the sum will be the same. • A quasi variable is a large number that can represent any number/ model a mathematical relationship. The students don't need to solve but can generalise mathematical relationships with them. • Equipment could be used to prove the commutative property.
Ngohe whakaharatau ***Independent Tasks***	Complete the following problems: 11 – 1 = 12 – 1 = 13 – 1 = 11 – 2 = 12 – 2 = 13 – 2 = 11 – 3 = 12 – 3 = 13 – 3 = 11 – 4 = 12 – 4 = 13 – 4 = 11 – 5 = 12 – 5 = 13 – 5 = What patterns do you notice? Did you find an easy way to find the answer?

Ngā matapae ***Anticipations***	

Rapanga 11 (Optional task)	E 8 ngā piere a Tina. Ka hoatu e 4 ki tana hoa. E hia ngā piere a Tina inaianei? 10 ngā piere a Tina. Ka hoatu e 6 ki tana hoa. E hia ngā piere a Tina inaianei? 12 ngā piere a Tina. Ka hoatu e ki tana hoa. E hia ngā piere a Tina inaianei?
Whakaaro Matua Pāngarau ***Big Ideas***	Objects in a set can be grouped and counted to get a final total. Number operations and strategies to solve number operations can be recorded using words, numbers, diagrams and symbols. There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.
Hononga Marautanga ***Curriculum Links***	**NA1-1:** Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. **NA1-3:** Know groupings with five, within ten, and with ten. **NA1-4:** Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Solve subtraction problems by splitting a set into groups. • Solve subtraction problems by bridging decades. • Represent and explain reasoning using pictures, numbers and words.
Reo Matatini Pāngarau ***Mathematical Language***	Subtract, inverse relationship, addition, subtraction.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select student solution strategies where they have used inverse relationships, grouping and knowledge of sets (e.g., 4 + 4 = 8 so 8 – 4 = 4) or have subtracted in parts. If no students use grouping or subtraction in parts, then model this as a solution strategy that students have used in the past. Connect: Ask students to describe how you would solve the following problem using knowledge of sets or subtracting in parts: 16 – 7 =

Kōrero Tautoko ***Teacher Notes***	• Students may compute each sum separately or draw on the commutative property of addition. • This task is about exploring the commutative property - the idea that you can add in any order and the sum will be the same. • A quasi variable is a large number that can represent any number/ model a mathematical relationship. The students don't need to solve but can generalise mathematical relationships with them. • Equipment could be used to prove the commutative property.
Ngohe whakaharatau ***Independent Tasks***	Complete the following problems: 11 – 1 = 12 – 1 = 13 – 1 = 11 – 2 = 12 – 2 = 13 – 2 = 11 – 3 = 12 – 3 = 13 – 3 = 11 – 4 = 12 – 4 = 13 – 4 = 11 – 5 = 12 – 5 = 13 – 5 = What patterns do you notice? Did you find an easy way to find the answer?
Ngā matapae ***Anticipations***	

Rapanga 12 (Optional task) (Whole Class Option)	 Whakamahia ētahi rerenga tau hei whakamārama tēnei tauira.
Whakaaro Matua Pāngarau ***Big Ideas***	There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship. Equations show relationships of equality between parts on either side of the equal sign. The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other.
Hononga Marautanga ***Curriculum Links***	NA1-1: Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions. NA1-3: Know groupings with five, within ten, and with ten. NA1-4: Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Whāinga Ako ***Learning Outcomes***	• Represent the same number in lots of different ways. • Identify the inverse relationship between addition and subtraction. • Explain and justify the commutative property.
Reo Matatini Pāngarau ***Mathematical Language***	Commutative property, inverse relationship, addition, subtraction, equal.

Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students who have number sentences that show patterns to share (e.g., 5 + 4 = 9 and 4 + 5 = 9, 9 – 5 = 4, 9 – 4 = 5). Ask students to identify the patterns and discuss whether they will always work. Record the conjectures and generalisations. Connect Ask students to whether they notice any number sentences that match and explain why they match.
Kōrero Tautoko ***Teacher Notes***	• Notice students' use of patterns e.g., 5 + 4 = 9 and 4 + 5 = 9, 9 – 5 = 4, 9 – 4 = 5, 2 + 2 + 2 + 2 + 1 = 9, or 1 + 2 + 2 + 2 + 2 = 9. Develop discussion using student generated number sentences that show patterns and relationships. • Encourage students to write equations. Model this for them if needed and use materials to make a connection.
Ngohe whakaharatau ***Independent Tasks***	Select one or more of the following assessment tasks (attached at the end of the document) as the independent activity: N1: Addition and subtraction problems to solve. NA1: Write number sentences related to a dot pattern. NA2: Properties of numbers and operations.
Ngā matapae ***Anticipations***	
